

7-2012

Promoting Research to the Masses: Assessing the Impact of a Poster Walk

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Recommended Citation

Adkins, Denise R. and Lyon, Julie S. (2012) "Promoting Research to the Masses: Assessing the Impact of a Poster Walk," *International Journal for the Scholarship of Teaching and Learning*: Vol. 6: No. 2, Article 19.
Available at: <https://doi.org/10.20429/ijstl.2012.060219>

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Abstract

Poster sessions are often used to educate communities. In this paper, we describe a project in which students summarized research findings on child development issues in poster form and showcased their work to the campus community. Through a variety of assessments, we show that poster walk participants not only enjoyed the event but also became more knowledgeable about child development issues.

Keywords

Posters, Research skills, Campus community, Child development, Educational awareness campaign

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Abstract

Poster sessions are often used to educate communities. In this paper, we describe a project in which students summarized research findings on child development issues in poster form and showcased their work to the campus community. Through a variety of assessments, we show that poster walk participants not only enjoyed the event but also became more knowledgeable about child development issues.

Keywords: posters, research skills, campus community, child development, educational awareness campaign

Introduction

Poster sessions are now commonplace at scientific meetings (Hess, Tosney, & Liegel, 2009) and have become popular in the classroom as well (cf. Goldstein, 1997; Levine-Rasky, 2009). Traditional poster sessions follow a research-based model whereby students present the results of their original research (Chute & Bank, 1983; Ello, 2006; Johnson & Green, 2007). However, some instructors assign posters projects as an exercise in scientific journalism (Shane, 2008), whereby students translate research findings into palatable language suitable for a lay audience. Academic poster sessions vary not only in purpose but also in audience. Some posters are only viewed by students enrolled in the class (Baird, 1991; Shane, 2008), while others allow a broader audience to view them at their leisure (Johnson & Green, 2007; Moradi & Townsend, 2006; Summers, 2005; Wheland, O'Neil, Adler, & Liska, 2009). Clearly, posters sessions have been accepted as a way to share scientific information with the public, vet ideas, critically examine interpretations, and inspire discussion. However, we rarely assess whether these public displays have an impact on the people who view them. Does the public enjoy these displays? More importantly, do they learn from these displays? In the current paper, we share an innovative project designed to showcase research findings to the campus community. We also empirically evaluate how this project impacted the public.

In the introductory level child development courses we discuss here, our intention is for students to garner basic research skills including reading, interpreting, and integrating research findings into written form accessible to the educated layperson. Of course, one of the major challenges in introducing students to research skills is to find projects that students will find motivating. One way to foster motivation is to assign creative and engaging projects (Vallerand & Bissonnette, 1992). Stewart (2008) and others have

recommended “poster fairs” as a method for motivating students (Farber & Penhale, 1995; Hess & Brooks, 1998). In fact, a majority of students who participated in Stewart’s poster fair described it as “fun.”

Our Poster Walk Project

In our “poster walk” project, students summarize published research into a poster format for a lay audience. In order to do this, students research a topic by reading the germane scientific literature and condensing the research into a short, informative format. As Shane (2008) notes, with scientific journalism, students must write concisely, focus on maintaining the integrity of the original material, and work to engage to the audience. Our poster walk project meets the goals of scientific journalism as our students were required to utilize these skills to communicate scientific literature to the lay audience.

Our students developed 11 x 17 posters to educate the campus community about important child development issues. The second author (a business professor) hosted an interactive training session during one class session on creating effective posters. Following these guidelines for effective advertisements, students chose an image (large, powerful, and relevant to the topic), wrote an engaging headline (a succinct message of 5-8 words), and created informative body copy (information supporting the assertion in the headline) to attract and educate their audience (Antin, 1993; Book, Cary, Tannenbaum, 1984; Jewler, 1985; Nelson, 1985; O’Guinn, Allen, & Semenik, 2009). Students then showcased their work at a publicized event open to the campus community. Some examples of presented poster topics include preventing sudden infant death syndrome, treating ADHD, detailing the risks of consuming caffeine while pregnant, preventing teens from texting and driving, and examining whether vaccinations have been linked to autism.

Creating the poster was a multi-faceted process with feedback embedded at all levels. Students began by conducting a literature search and completing an annotated bibliography. In the annotated bibliography, students wrote an introductory paragraph synthesizing their findings and explaining their posters’ messages. Then, they provided credible sources (e.g., peer reviewed journals, scientific institutions – NICHD, NSF, NIH, AAP) supporting the assertions in their introductory paragraph. For each source, they provided the reference in APA style and a summary of the pertinent information obtained from that source. Students received a grade and feedback on their annotated bibliographies. They then submitted a draft of their poster, received feedback, worked in pairs to incorporate the feedback, and submitted the final version of their posters. All posters were graded and screened for accuracy and clarity before being displayed in the poster walk. Final versions were printed and hung in a large room in the student center. We invited the campus community to view the posters.

Assessing the Impact of Poster Walks on the Campus Community

Previous research on poster sessions has focused on student enjoyment of the poster session (Farber & Penhale, 1995; Hess & Brooks, 1998; Stewart, 2008) and self-reported student learning (Baird, 1991, Stewart, 2008). Those instructors who organized poster sessions at a publicized event on campus (Levine-Rasky, 2009; Wheland, O’Neil, Adler, and Liszka 2009) did not assess whether those who viewed the poster sessions learned from the presented information.

More broadly, research on public information campaigns suggests that they can be used to enhance awareness (Sims & Baumann, 1983) and alter behavior, at least in the short-term (Snyder, Hamilton, Mitchell, Kiwanuka-Tondo, Fleming-Milci, & Proctor, 2004). The significance of the impact on behavior varies based on any number of factors (Snyder et al., 2004) from whether the goal is to implement a new behavior or cease an old one. Repeated campaigns seem to be necessary to effect and maintain behavioral changes (Buchbinder & Jolley, 2005). Given that change starts with knowledge and recall has been shown to increase significantly following campaigns (Buchbinder & Jolley, 2005), our goal was to assess whether this poster project served to enhance awareness on a number of child development issues.

We told our students that the goal of their posters was to help the campus community learn about important child development issues. The public nature of the project was intended to motivate the students to fully engage in the process. We tried to impress upon the students the importance of serving as an expert on their topic and the responsibility they had to ensure the accuracy, appropriateness, and relevance of the material they presented. To ensure their work met these criteria, all student posters had to pass the screening of the first author, a child development instructor, to be displayed in the poster walk. In order to test the impact of the poster walk, we assessed whether poster walk participants learned specifics about child development after viewing the posters. Consistent with Bloom's taxonomy, we used recall tests to assess whether participants retained the relevant information presented (Bloom, 1956). To our knowledge, this is a unique angle not usually reported in the Scholarship of Teaching and Learning (SOTL) literature.

While past research focused on student outcomes (Baird, 1991; Farber & Penhale, 1995; Hess & Brooks, 1998; Stewart, 2008), our study adds to the literature on poster sessions by focusing attention on whether the audience increased their knowledge of showcased topics. We also assessed audience enjoyment.

Hypothesis 1: Participants who attend the poster walk will be more knowledgeable about child development issues.

Hypothesis 2: Participants will enjoy the poster walk.

General Method

Overview

Three studies were conducted at Roanoke College to examine the impact of using a poster walk to relay research to the educated layperson. Consistent with social science research methodology, we employed three different methods in an attempt to show that recall, broadly speaking, was enhanced and that the results were not specific to a single design. All poster walks were conducted on the Roanoke College campus and were open to the campus community and visitors. We obtained IRB approval for each iteration of the study.

Procedure

Members of the campus community and campus visitors were invited to attend the poster walk. Some professors offered extra credit to their students for participation. Students enrolled in entry-level psychology courses could elect to participate for research credit in their respective courses. Students also stood at the entryways and handed out fliers during the poster walk to solicit participation.

Protocol. Posters were displayed in a large room in the student center. Participants were greeted, given the study information sheet, and instructed to view each poster. Participants could spend as much time as they liked viewing the posters.

Study 1

Participants

One hundred and thirty-eight participants (60 males) attended the poster walk in study 1, including 110 students (52 freshmen), 16 faculty members, 9 staff members, and 3 members of the local community. Twenty-one participants were parents. Of the remaining participants, 74 reported plans to have children.

Procedure

We used a within-subjects pre-test—post-test design to evaluate learning in Study 1.

Protocol. Eighteen posters were displayed evenly spaced along the walls in a large room. Participants reported to the front desk where they were given a pre-test knowledge survey. Upon completion, they were instructed to view each poster, taking note of which they liked, and report back to the front desk when they were finished. At this point, participants completed a post-test knowledge survey and enjoyment item.

Pre-test knowledge survey. An 18-item open-ended knowledge test was administered to participants before they entered the poster walk. Sixteen items required 2 responses, 1 required 1 response, and 1 required a single correct response (i.e., How should an infant be positioned while sleeping?). All knowledge survey items were selected and in some cases simplified from validated child development exam questions. The pre-test also included basic demographic information. A sticker with an identification number was placed at the top of the pre-test. Participants were given a matching ID sticker for use after they completed the poster walk.

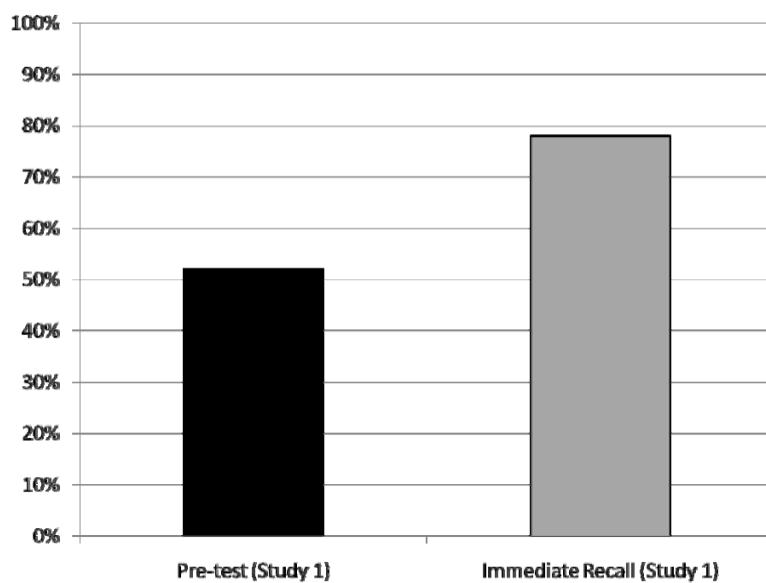
Post-test knowledge survey. After viewing the posters, participants reported back to the front desk and returned their ID sticker. The ID sticker was placed at the top of the post-test and participants were directed to a quiet area. The post-test knowledge survey was identical to the pre-test with the exception that it included an enjoyment item.

To prevent bias, student researchers were trained to score the knowledge test responses. Responses were coded as correct, partially correct, or wrong. Any questions about how to score items were directed to the first author, who made the final decision. As items varied in the number of possible responses (1-2), an average score was calculated for each response. An overall score was tabulated for the entire knowledge test by averaging individual item scores.

Enjoyment of poster walk. Attached to the post-knowledge test was a short survey of participant reactions. Participants were asked to rate their enjoyment ("I enjoyed the poster walk") from 1 (strongly disagree) to 5 (strongly agree).

Results

A paired sample t-test revealed significant differences between the pre- and post-knowledge test, $t(33) = 10.50, p < .01$, with the post-test score higher ($M=.78, SD=.25$) than the pre-test score ($M=.52, SD=.21$), indicating that participants were more knowledgeable about child development issues following the poster walk. 95% CIs of the difference were [-.31, -.21]. Hypothesis 1 was supported. See Figure 1.

Figure 1. Pre-Test versus Post-Test Results from Study 1

A one-sample t-test on participant enjoyment was significantly different from 3 (the midpoint of the scale), $t(130) = 16.54$, $p < .01$, with a mean of 4.11(.77). 95% CIs of the difference were [.98, 1.25]. Hypothesis 2 was supported.

Study 2

Participants

One hundred and ninety-four participants attended the poster walk and completed a short reaction survey. Of those, the 74 who provided their email addresses were invited to complete the knowledge test. Forty-five (7 males) did so, including 43 students (9 freshmen), and 2 staff members (61% response rate). None of the participants were parents. Forty-one participants reported plans to have children.

We invited 70 students who did not attend the poster walk to serve as the comparison sample. Fifty-three participants (22 males) completed the knowledge test (76% response rate). All were students (21 freshmen). One participant was a parent. Of the remaining participants, 44 reported plans to have children.

Procedure

To encourage participants to view all posters, we asked them to complete a rating sheet (which poster was the most valuable, most educational, etc.), which included the enjoyment item. In contrast to Study 1, we used a between subjects comparison design whereby we compared knowledge test scores of those who attended the poster walk to a matched sample. Study 2 participants were asked to complete a delayed recall knowledge test one

week later rather than an immediate recall assessment. Therefore, the assessment was administered online instead of on paper. A comparison sample also completed the delayed recall assessment.

Protocol. Sixteen posters were displayed evenly spaced along the walls in a large room. After viewing the posters, participants returned their rating sheet and email address to the front desk. They received an online delayed recall knowledge test one week later. Participants in the comparison group completed the same knowledge test.

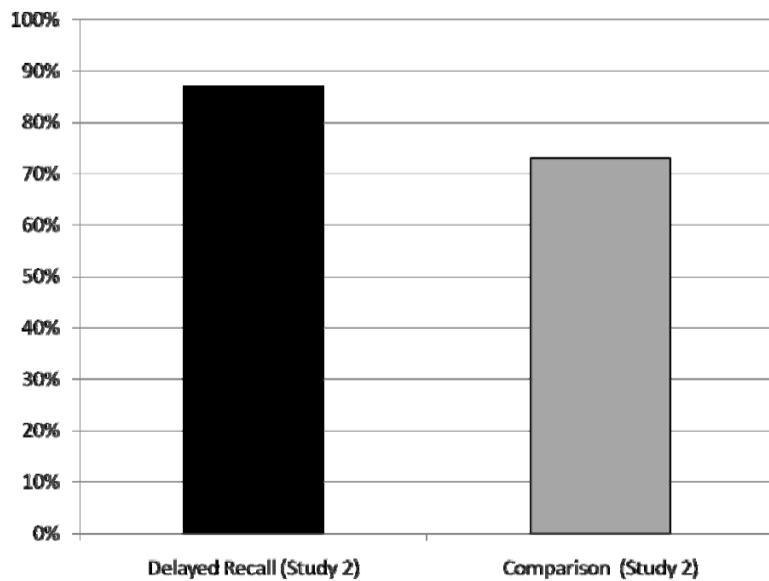
Enjoyment of poster walk. After viewing the posters, participants rated their enjoyment ("I enjoyed the poster walk") from 1 (strongly disagree) to 5 (strongly agree).

Delayed recall knowledge test. A 17-item open-ended knowledge test was administered via an online survey. Each item required a single response. However, only three items had a single correct answer. Responses were coded as correct, partially correct, or wrong. If participants left the answer blank, their response for that question was coded as missing data. An average score on the knowledge test was tabulated.

Results

An independent samples t-test revealed significant differences on the knowledge test, $t(95) = 5.10, p < .01$, with scores higher for those who attended the poster walk ($M=.86, SD=.12$) than those who did not attend ($M=.73, SD=.14$), indicating that participants who attended the poster walk were more knowledgeable about child development issues. 95% CIs of the difference were [.08, .19]. Hypothesis 1 was supported. See Figure 2.

Figure 2. Delayed Recall versus Comparison Test Results from Study 2



A one-sample t-test on participant enjoyment was significantly different from 3, $t(193) = 22.497, p < .01$, with a mean of 4.08(.67). 95% CIs of the difference were [.99, 1.18]. Hypothesis 2 was supported.

Study 3

Participants

One hundred and eight participants (34 males) attended the poster walk, including 99 students (16 freshmen), 6 faculty members, and 3 staff members. Six participants were parents, and 80 reported plans to have children. Of those, 81 provided valid email addresses and were invited to complete the knowledge test. Seventy-three did so (90% response rate).

Procedure

We used a between subjects comparison design whereby we compared the immediate recall responses from Study 1 to the delayed recall responses in Study 3. Though not identical, the knowledge tests both required 1-2 responses per item.

Protocol. Thirty-one posters were displayed evenly spaced along the walls in a large room. After viewing the posters, participants returned their rating sheets and email addresses to the front desk. They were asked to complete a delayed recall knowledge test one week later.

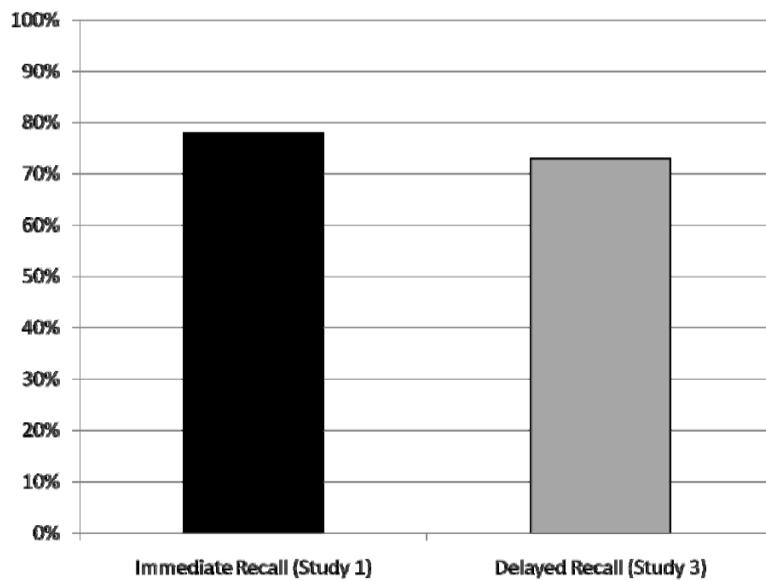
Enjoyment of poster walk. After viewing the posters, participants rated their enjoyment ("I enjoyed the poster walk") from 1 (strongly disagree) to 5 (strongly agree).

Delayed recall knowledge test. A 31-item open-ended knowledge test was administered via an online survey to all participants one week after the poster walk. Twenty-eight items required two responses, while 3 items required a single response (2 of these had a single correct answer). Responses were coded as correct, partially correct, or wrong. If participants left the answer blank, their response for that question was coded as missing data. An average score on the knowledge test was tabulated.

Results

We compared the responses from this delayed recall test to the immediate recall test in Study 1. An independent samples t-test revealed significant differences on the knowledge test, $t(205) = 1.96$, $p = .03$, with scores higher for those who took the immediate knowledge test ($M=.78$, $SD=.21$) than those who took the delayed knowledge test ($M=.73$, $SD=.13$), indicating that participants recalled more information immediately following the poster walk than a week later. 95% CIs of the difference were [-.11, .00]. Hypothesis 1 was supported. See Figure 3.

Figure 3. Immediate Recall versus Delayed Recall Test Results from Study 3



A one-sample t-test on participant enjoyment was significantly different from 3, $t(99) = 14.36$, $p < .01$, with a mean of 4.01(.71). 95% CIs of the difference were [.87, 1.15]. Hypothesis 2 was supported.

Summary and Concluding Discussion

Overall, results suggest that our poster walk was a success in increasing the knowledge of the campus community on child development issues. Using multiple methods, we found that participants who attended the poster walk learned from the experience. In keeping with the literature on recall tests, we found that participants recalled the most information when assessed directly after viewing the posters in contrast to a week later. We were very pleased with the amount of knowledge retained by participants after the poster walk. Consistent with previous research, our participants showed a significant increase in knowledge (Buchbinder & Jolley, 2005).

Additionally, we had very positive reactions from the participants who came to the poster walk. For three iterations of the study, average enjoyment of the poster walk was significantly higher than expected by chance. Our event has become anticipated, and we have been able to attract a large number of participants each semester. Our students were proud to show off their work to their peers and to other faculty, staff, and administrators on campus.

We should note that more individuals completed the enjoyment scale than the knowledge assessment, so it is likely that we educated an even broader audience than reported. Anecdotal reports from participants indicate that they were impressed with the quality of work and thought the poster walk was both an effective and efficient way to communicate with the public.

While we did not specifically examine motivation and enjoyment in our students, we can report that they were engaged in the project. Most students took advantage of office hours

to receive additional feedback on their posters, and many followed up our conversations with emails. The rate of student participation in office hours was higher for this course compared to the other courses we were teaching that semester. Additionally, approximately 26% of our students utilized open ended questions on the course evaluation to report that the poster project was a valuable learning experience.

The poster project seems to be an engaging assignment that can be utilized to educate the public and build student research skills. We believe this assignment is a successful model for a research project in lower-level classes. Students gain skills in conducting literature searches, synthesizing literature, evaluating the relevance of scientific findings, evaluating source credibility, and writing clearly and concisely for an educated lay audience. As such, students should be better prepared for conducting and writing their own research projects in upper-level classes.

Limitations

Like all studies, ours was not without limitation. First, we had to create new knowledge tests each semester because students created new posters each semester. Thus, we could not directly compare the performance on the knowledge tests from the three semesters. Secondly, we were concerned about participation because we switched from in-person to online assessment for Study 2. To encourage completion of the assessment, we shortened it to require only one answer for each question. As such, we believe our test from Study 2 was easier than the other tests and may have resulted in higher scores. From a practical perspective, this is not undesirable. The goal of the project was for participants to learn. Accordingly, we showed that they learned through both immediate and delayed recall tests. We also showed that they retained basic knowledge of most displayed topics when the number of posters viewed ranged from 16 to 31.

We are concerned about the intrinsic motivation of our participants because they were primarily nonparents. While many of our participants reported that they planned to have children in the future, we suspect that few have immediate plans to do so. Therefore, the primary incentive to participate was extra credit. However, we suspect that these results may be a conservative test of the effectiveness of our poster walk and that the results would be even stronger if our participants were invested in learning because they already had children. In the future, we plan to host the poster walk in settings where the participants should be more intrinsically motivated to learn about child development issues (e.g., PTA, Head Start).¹

Finally, we were limited in that we did not collect student reactions to completing the poster project. As aforementioned, based on our student evaluations, we believe that students enjoyed the project and learned from it; however, we did not test this systematically. We have anecdotal evidence that they found this project motivating, but again we do not have any direct measures of this.

Future Directions

In the future, we will assess student motivation, learning outcomes, and enjoyment in a more intentional manner. We also plan to showcase these posters at PTA events, local shelters, and doctor's offices. We anticipate that some of the displays will be permanent. In this way, our students' work could really impact the community at large, and parents who might have a more vested interest in learning about these issues could benefit from the research literature. We hope that by increasing knowledge of child development issues, parents and potential parents will use more effective techniques with their children. We

hope that our students will be proud of their contributions to the campus community and will retain the research-related skills they learned while developing their posters.

Acknowledgements

Partial funding for this project was provided by the Faculty-Staff Learning Community, the Fund for the Improvement of Postsecondary Education (FIPSE), U.S. Department of Education, the Psychology Department, and the Dean's Office at Roanoke College. We thank Aileen Johnson and Ioana Corneanu for assistance with coding.

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Footnote

1 One of the posters on spanking was requested for display at a local homeless shelter.